



Coastal Protection and Restoration Authority of Louisiana

Office of Coastal Protection and Restoration

2008 Annual Inspection Report

for

POINT AU FER ISLAND HYDROLOGIC RESTORATION (TE-22)

State Project Number TE-22
Priority Project List 2

August 2008
Terrebonne Parish

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I. Introduction

The Point Au Fer Island Hydrologic Restoration Project encompasses 5,230 acres of intermediate and brackish marsh and open water on Point Au Fer Island located approximately 30 miles south of Morgan City, Louisiana, in Terrebonne Parish. Point Au Fer Island lies approximately 6 miles southeast of the mouth of the Atchafalaya River. The island is bordered by the Gulf of Mexico to the south, Atchafalaya Bay to the west, Four League Bay to the north and northeast, and Oyster Bayou tidal pass to the east (See Appendix A).

Construction of the Point Au Fer Island Hydrologic Restoration Project was authorized by Section 303(a) of Title III Public Law 101-646, the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) enacted on November 29, 1990 as amended. The Project was approved on the second Priority Project List.

The property associated with the Point Au Fer Island Hydrologic Restoration Project is owned by the Terrebonne Parish School Board, Point au Fer LLC, and the Roman Catholic Church - Arch Diocese of New Orleans.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of the Point Au Fer Island Hydrologic Restoration Project (TE-22) is to evaluate the constructed project features in order to identify any deficiencies. The inspection results are used to prepare a report detailing the condition of the project features and recommending any corrective actions considered necessary. Should it be determined that corrective actions are needed, the Office of Coastal Protection and Restoration (OCPR) shall provide, in the report, a detailed cost estimate for engineering, design, supervision, inspection, construction, contingencies and an assessment of the urgency of such repairs (O&M Plan, 2002). The annual inspection report also contains a summary of maintenance projects which were completed since completion of constructed project features and an estimated projected budget for the upcoming three (3) years for operation, maintenance, and rehabilitation. The three (3) year projected operation and maintenance budget is shown in Appendix C. A summary of past operation and maintenance projects completed since construction of the Point Au Fer Island Hydrologic Restoration Project is outlined in Section IV.

The annual inspection of the Point Au Fer Island Hydrologic Restoration Project (TE-22) took place on two, separate days. The first trip was held on April 8, 2008 to inspect the Phase II and Phase III rock shoreline protection along the Gulf of Mexico. In attendance were Daniel Dearmond, Brian Babin, Shane Triche, and Elaine Lear from OCPR and Cheryl Brodnax with the National Marine Fisheries Service (NMFS). All parties met at Bob's Marina in Bayou Black, Louisiana. The weather conditions included partly cloudy skies and mild temperatures with strong winds. The annual inspection began at approximately 11:00 a.m. at the west end of the Phase III rock extension (Area 5) and ended at approximately 12:00 p.m. at the east end of the Phase III rock extension (Area 4). Tide elevation at the time of inspection was approximately 1.5 feet NAVD88.

The second trip was held on June 25, 2008 to inspect the Phase I canal plugs located on the east side of the island. In attendance were Daniel Dearmond, Shane Triche from OCPR and Cheryl Brodnax with NMFS. Weather conditions included partly cloudy skies, temperatures in the mid 80's F, and moderate winds. The inspection began at approximately 10:30 a.m. at Plug No. 4A located at the south end of the Transco Canal at the Gulf of Mexico, continued through Plugs No. 6, 2, 1, 3A, 7, and 3 and ended at approximately 2:00 p.m. at Plug No. 8 located in the eastern end of Hester Canal near Bay Castagnier. Tide elevation at the time of inspection was approximately 1.1 feet NAVD88.

The field investigation included a visual inspection of the constructed project features. Photographs were taken at each project feature (see Appendix B).

III. Project Description and History

Approximately 8% of Louisiana's coastal marshes have been converted to open water canals and their associated spoil banks (Neill and Turner 1987). Canal construction likely alters wetland hydrology and contributes to wetland loss in coastal Louisiana (Turner et al. 1984). Similar alterations to the natural drainage pattern at Point au Fer Island have occurred from the dredging of oil and gas access canals through the interior of the island. Strong tidal flows occur between Locust Bayou in the southwest and Four League Bay in the northeast (NMFS n.d.). Point au Fer Island has experienced decreased salinities as sediments and fresh water from Atchafalaya Bay have circulated through the islands' interior marshes. Increased fresh water flow and sediment input have not been effectively utilized due to changes in hydrologic patterns and the presence of artificial levees (NMFS n.d.).

The marsh habitat on Point Au Fer Island is predominately brackish marsh with intermediate marsh in the interior of the island. In the years leading up to construction of the project, certain areas of Point Au Fer Island had become weakened with avenues for saltwater intrusion from the Gulf of Mexico threatening (Monitoring Plan, 1998). The Mobil Canal levee (Phase II area) had been breached during Hurricane Andrew, and the southern end of Transco Canal (Phase I area) had almost been breached by the Gulf of Mexico.

The project was designed and constructed in order to reduce marsh loss and the potential for saltwater intrusion from storm surges and high tides (Phase I), to restore hydrologic circulation close to conditions present before dredging of the pipeline canals (Phase I), and to reduce the chance of breaching of the shoreline between the Gulf of Mexico and Mobil Canal during overwash events (Phase II and III). The specific goals established to evaluate the effectiveness of the project were to (1) reduce the rate of marsh loss (Phase I), (2) reduce the rate of canal widening (Phase I), and (3) maintain or decrease local shoreline erosion rate within the project area (Phase II and III) (Comprehensive Monitoring Report No. 1, 2001).

The Point Au Fer Island Hydrologic Restoration Project was constructed in three (3) phases. Phase I consisted of seven (7) canal plugs located in two pipeline canals. Four (4) timber plugs, Plugs No. 1, 2, 7, and 8, were constructed in Hester Canal (east-west). One (1) timber

plug, Plug No. 6, and two (2) reef shell plugs, Plugs No. 3A and 4, were constructed in Transco Canal (north-south). Construction of the Phase I canal plugs was completed in December 1995. Phase II consisted of approximately 3,600 linear feet of rock shoreline protection of Areas 1, 2, and 3 along the Gulf of Mexico adjacent to the Mobil Canal. Phase II construction was completed in May 1997. Phase III consisted of extending the rock shoreline protection 3,037 linear feet to the east (Area 4) and 625 linear feet to the west (Area 5). Prior to construction, a change order added an additional lift of rock over 388 linear feet of the Phase II shoreline protection to repair a breach area located near the east end of Phase II. Additionally, Phase I, Plug No. 4, was rebuilt with dredged material. Also, the existing Transco Canal steel bulkhead/rock plug (Plug No. 4A), located approximately 200 feet south of Plug No. 4, was reinforced by placing Petraflex mats (articulated concrete mats, 8' x 20' x 9") along the Gulf shoreline to the west and east of the existing Plug No. 4A. A total of 67 mats were placed on the west side and 58 mats were placed on the east side of Plug No. 4A. Phase III construction was completed in June 2000 (Phase III Final Report, 2000).

The principle project features include:

Phase I: Construction of timber and shell plugs in Hester and Transco Canals.

- Plug No. 1 – 200 linear feet (LF), Timber bulkhead plug in the Hester Canal located near Mosquito Bay.
- Plug No. 2 – 270 LF, Timber bulkhead plug in Hester Canal just west of Transco Canal.
- Plug No. 3A – 240 LF, Reef shell construction located in the Transco Canal north of Hester Canal.
- Plug No. 4 – 225 LF, Reef shell construction located in Transco Canal near the Gulf of Mexico.
- Plug No. 6 – 180 LF, Timber bulkhead plug located in Transco Canal just south of Hester Canal.
- Plug No. 7 – 200 LF, Timber bulkhead plug located in Hester Canal just east of Transco Canal.
- Plug No. 8 – 180 LF, Timber bulkhead plug located at the east end of Hester Canal near Bay Castagnier.

Phase II: 3,600 linear feet of rock shoreline protection of the beach separating the Gulf of Mexico from the Mobile Canal.

- Area 1 – 1,800 linear feet of rock dike protecting the beach along the Gulf of Mexico separating Mobil Canal and the Gulf.
- Area 2 – 400 linear feet of rock dike protecting the beach along the Gulf of Mexico near the west end of Mobil Canal.
- Area 3 – 1,400 linear feet of rock dike along the shoreline of the Gulf between Area 1 and Area 2, constructed with funds provided by Mobil Oil Company.

Phase III: Modifications/additions to the rock shoreline protection of the beach separating the Gulf of Mexico from the Mobil Canal.

- Area 4 – 3,037 linear feet extension of the Phase II rock structure on the east end.
- Area 5 – 625 linear feet extension of the Phase II rock structure on the west end.
- Additional 16 inch lift of rock placed over 388 feet of the Phase II rock structure near the east end of Phase II.
- Plug No. 4A (Transco Canal steel bulkhead/rock plug) – Petraflex mats (articulated concrete mats, 8' x 20' x 9") placed along the Gulf shoreline to the west (67 mats) and east (58 mats) of the existing steel sheet pile bulkhead (Plug No. 4A).

The Point Au Fer Island Hydrologic Restoration Project (TE-22) has a twenty-year (20 year) economic life which began in December 1995 (Phase I), May 1997 (Phase II), and June 2000 (Phase III). Attached is the three (3) year projected budget for the project (See Appendix C).

IV. Summary of Past Operation and Maintenance Projects

Below is a summary of completed maintenance projects and operation tasks performed since completion of the Point Au Fer Island Hydrologic Restoration Project (TE-22).

June 2000 – Phase I Plug No. 4 was rebuilt with dredged material, and Petraflex mats (articulated concrete mats, 8' x 20' x 9") were placed along the shoreline to the west and east of the existing Transco Canal steel bulkhead/rock plug (Plug No. 4A) at the Gulf. A total of 67 mats were placed on the west side and 58 mats were placed on the east side of Plug No. 4A. This work was performed by Johnny F. Smith Truck & Dragline Service, Inc. of Slidell, LA as part of the Phase III construction contract and funded out of the project O&M budget. The total construction cost for this maintenance event was \$237,874.

August 2005 – The east end of Phase III (Area 4) rock dike was extended approximately 300 linear feet to the shoreline using LaDOTD Class 250 lbs. riprap above a geotextile fabric. At Plug No. 4A (Transco Canal steel bulkhead/rock plug) the east mats were capped with LaDOTD Class 250 lbs. riprap. Also, a rock dike (approximately 200 linear feet of 250 lbs riprap on geotextile fabric) was constructed from the east end of the mats to the shoreline. At Plug No. 8 (Phase I) in Hester Canal, in order to close a breach around the south end, the bulkhead was extended approximately 60 linear feet to the south using vinyl sheet pile bulkhead. Also, three Submar mats (articulated concrete mats, 8' x 20' x 4.5") were placed at the end to prevent scour. It should be noted that a small breach repair to Weir No. 3 of the TE-26 Lake Chapeau project, extending the rock to the south bank, was also included in this maintenance activity. This project was surveyed, designed, and inspected by Picciola & Associates, Inc. of Cutoff, Louisiana. The project was constructed by Luhr Bros., Inc. of Alexandria, LA. The total construction cost for this maintenance event was \$391,382.

V. Inspection Results

Plug No. 1 – Timber Bulkhead Plug (Photos 7 - 8, Appendix B)

The timber bulkhead plug located on the west end of Hester Canal near Mosquito Bay appeared to be in good condition with no noticeable structural defects. The tie-ins at the banks had no apparent signs of erosion. The warning signs and supports were also in good condition. No maintenance will be required at Plug No. 1.

Plug No. 2 – Timber Bulkhead Plug (Photos 9 - 10, Appendix B)

The timber bulkhead plug located across Hester Canal just west of Transco Canal appeared to be in good condition with no noticeable structural defects. The tie-ins at the banks had no apparent signs of erosion. The warning signs and supports were also in good condition. No maintenance will be required at Plug No. 2.

Plug No. 3A – Shell Plug (Photos 6, Appendix B)

The shell plug located across Transco Canal north of Hester Canal is in poor condition. As noted in previous years' inspection reports, the shell plug has eroded in the center of the structure. According to the as-built and construction plans, the shell plug was constructed to elevation +4.0 NGVD. At the time of this inspection, the shell plug crest elevation was approximately 1.2 feet below the water elevation near the center. The shell tie-ins at the banks had no apparent signs of erosion. The west warning sign and supports were in good condition, but the east warning sign was missing. At this time repairing the shell plug is not recommended due to construction access constraints; however, this plug should continue to be monitored on future site visits.

Plug No. 4 – Shell Plug

The crest elevation along most of the plug was below water elevation at the time of inspection as it has been for several years. No maintenance is recommended for the reef shell plug; instead, maintenance efforts have been concentrated on Plug 4A (Transco Canal bulkhead) located approximately 200 feet south of Plug No. 4 at the Gulf.

Plug No. 4A – Transco Canal Gulf bulkhead (Photos 13 - 17, Appendix B)

The erosion directly behind the east mats noted in previous inspections appears to have been slowed or halted as a result of the rock lift placed in 2005. Material has accreted behind the rock lift, and that deposited material is now densely vegetated. However, continued shoreline erosion was noted at the east end of the 2005 maintenance rock. Also, the rock dike appears to have settled. There is a small breach in the dike near the east tie-in that was a result of the 2005 hurricanes. The shoreline erosion here should continue to be monitored on future inspections. The western mats are in good condition, although shoreline erosion continues to increase near the end of the mats. There continues to be a small breach behind the existing bulkhead where water is passing behind the bulkhead and over the rocks and into Transco Canal. The steel sheetpile and tie-rods are heavily corroded and should continue to be monitored. No maintenance activities are recommended at this time other than continuing the annual inspections of the site.

Plug No. 6 – Timber Bulkhead Plug (Photos 11 – 12, Appendix B)

The timber bulkhead appears to be in good condition despite the existing deflection of the middle of the structure which occurred during construction. Both tie-ins appear intact with no apparent signs of erosion. The warning signs and supports were also in good condition. At this time no maintenance is recommended at Plug No. 6; however, the condition of the timber bulkhead should continue to be monitored on future site visits.

Plug No. 7 – Timber Bulkhead Plug (Photo 4 – 5, Appendix B)

The timber bulkhead plug located across Hester Canal east of Transco Canal appeared to be in good condition with no noticeable structural defects. The tie-ins at the banks had no apparent signs of erosion. The warning signs and supports were also in good condition. No maintenance will be required at Plug No. 7.

Plug No. 8 – Timber Bulkhead Plug (Photos 1 - 3, Appendix B)

The timber bulkhead is in good condition. The breach around the south end noted in previous inspections was closed in 2005 by construction of a vinyl sheet pile bulkhead extension approximately 60' in length. The concrete mats (scour pad) have limited the erosion at the south tie-in. The north tie-in at the canal bank had no apparent signs of erosion. The warning signs and supports were in good condition. No maintenance will be required at Plug No. 8.

Phase II – Areas 1, 2 & 3, Rock Dike

Site was not visited due to time constraints. No significant changes from previous inspection report are expected. No maintenance will be required in Areas 1, 2, and 3.

Phase III – Area 4, Rock Dike (Photos 20 - 24, Appendix B)

The breach around the east end of Area 4 rock dike noted in previous inspections was closed by the 2005 maintenance project with construction of approximately 300' of rock dike to the shoreline. Vegetation has been established behind rock dike in previous open water breach location. The new rock lift and extension dike appeared to be in good condition; however, continued shoreline erosion was noted at the east end shoreline tie-in and should continue to be monitored on future inspections. Also, the small area of displaced rocks near the east end was due to the 2005 hurricanes as noted in the 2006 inspection report. It appears that some settlement has occurred along sections of the dike and should continue to be monitored on future inspections. No maintenance will be required in Area 4.

Phase III – Area 5, Rock Dike (Photos 18 - 19, Appendix B)

The rock dike along Area 5 of Phase III appeared to be in good condition with no noticeable settlement of the structure. Beyond the west end of the dike, erosion of the beach face was observed and should continue to be monitored on future site visits. No maintenance will be required in Area 5.

VI. Conclusions and Recommendations

Overall, the Phase I canal plugs were in good condition with the following deficiencies noted in the inspection results. Shell Plugs No. 3A and 4 have been eroded in the center of the plugs since near the end of construction. No maintenance is recommended for Plug No. 3A because of the construction access constraints. No maintenance is recommended for Plug No. 4 as maintenance efforts are being concentrated on Plug No. 4A located to the south. The timber bulkhead Plug No. 6 has been out of alignment in the center of the structure since construction, but the deflection does not appear to be increasing over time. Since the structure is still intact, no maintenance is recommended at this time. The 2005 breach repairs at Plug No. 4A and Plug No. 8 appear to be in good condition other than a small breach of the rock dike at Plug No. 4A near the east end. No maintenance activity is warranted. The rock dikes of Phase II and III are in good condition. In Phase III, the maintenance project of 2005 repaired the breach around the east end of the Area 4 rock shoreline protection and continues to be intact. No maintenance is recommended for the Phase II and III rock. It should be noted that the Gulf shoreline continues to erode wherever the project rock terminates. This is true of the Phase III Area 4 and Area 5 rock dike and the Plug No. 4A mats and rock dike. While no maintenance is recommended at this time, the beach and marsh erosion at these locations should continue to be monitored in the coming years for possible breaches into the canals.

References:

Louisiana Department of Natural Resources – Coastal Restoration Division. 1998. *Monitoring Plan for Project No. TE-22 Point au Fer Island Hydrologic Restoration*, Baton Rouge, Louisiana.

National Marine Fisheries Service n.d. *Coastal Wetlands Planning, Protection and Restoration Act: Proposed Project Information Sheet*. 9 pp.

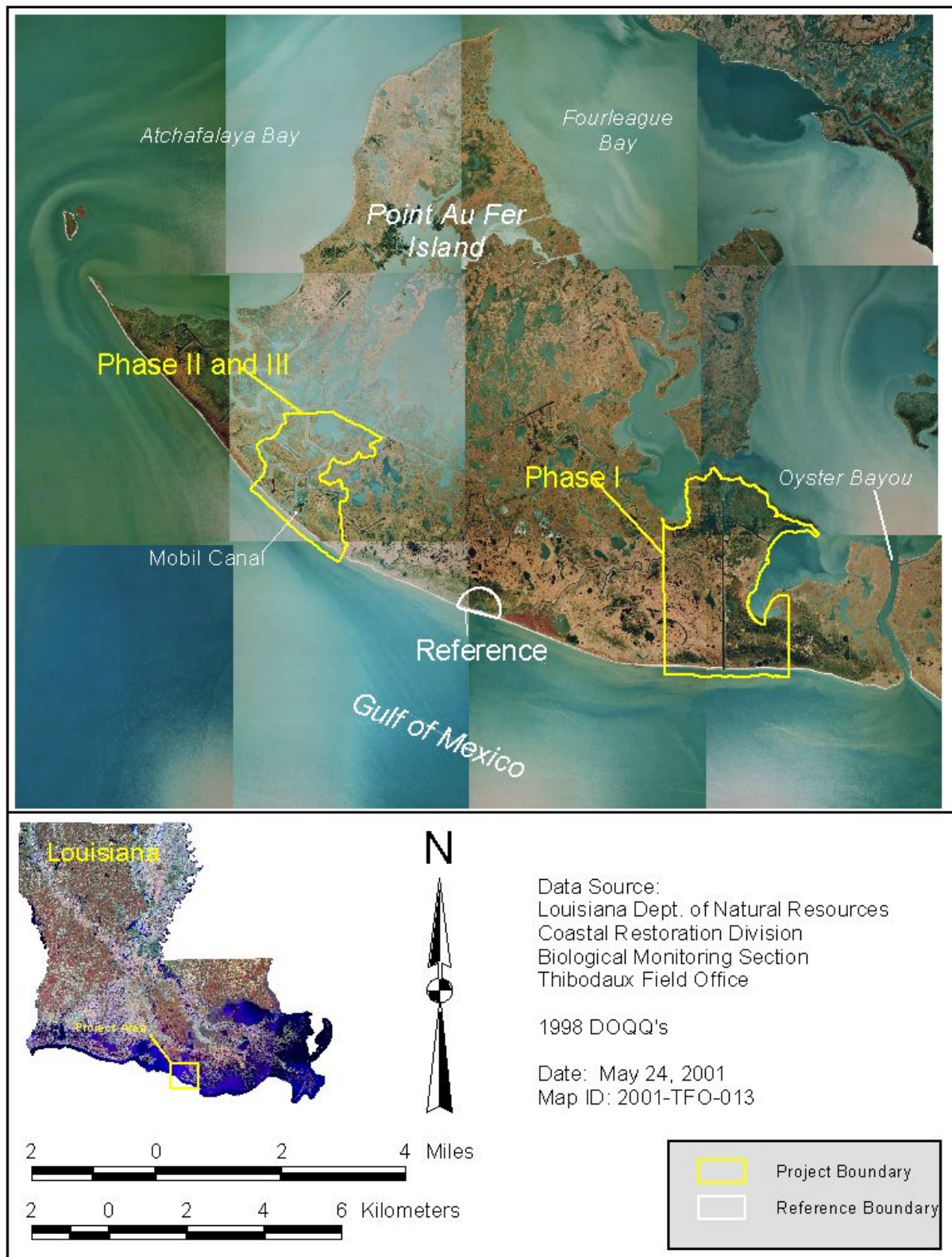
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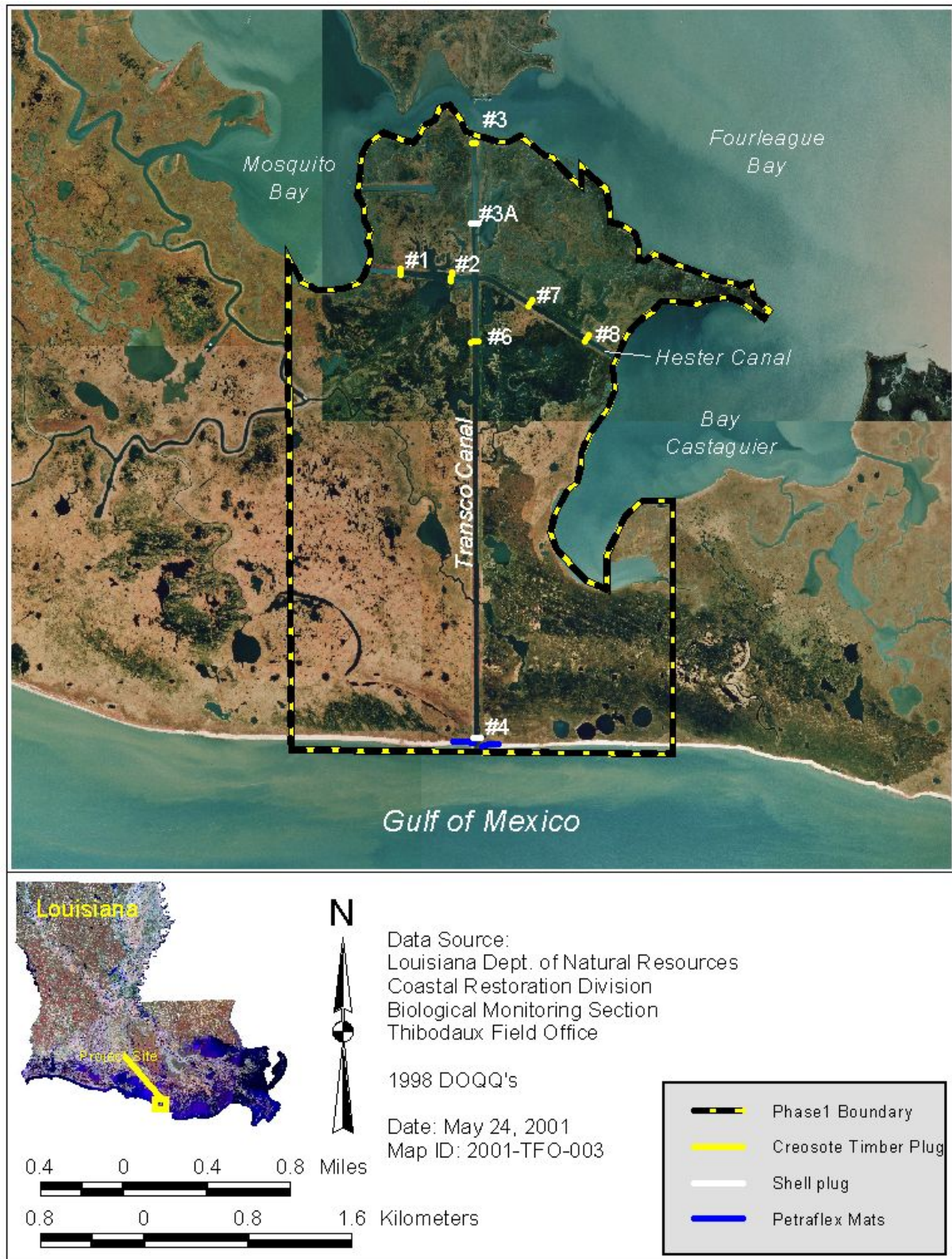
Rapp, J., Clark, N. and Kane, S. Louisiana Department of Natural Resources – Coastal Restoration Division, Baton Rouge, La. and Johnson Control World Services, Lafayette, La. 2001. *Comprehensive Monitoring Report No.1 for the Point au Fer Island Hydrologic Restoration Project (TE-22)*,

Turner et al. 1984. *The impact and mitigation of mancanals in coastal Louisiana*. Water Science and Technology. 16:497-504.

Appendix A

Project Features Map







Appendix B

Photographs



Photo 1. *Plug No. 8 – View of plug looking north along timber bulkhead in Hester Canal. Date of photo: 6-25-2008.*



Photo 2. *Plug No. 8 – View of south bank tie-in and 2005 maintenance extension of sheet pile wall. Date of photo: 6-25-2008.*



Photo 3. *Plug No. 8 – View of south tie-in at end of 2005 maintenance extension of sheet pile wall. Submar mat scour pad can be seen. No new scour or erosion of marsh was noted at the tie-in. Date of photo: 6-25-2008.*



Photo 4. *Plug No. 7 – View of plug from inside looking southeast in Hester Canal. Date of photo: 6-25-2008.*



Photo 5. *Plug No. 7 – View of plug tie-in at north bank of Hester Canal. Date of photo: 6-25-2008.*



Photo 6. *Plug No. 3A – View of location of shell plug 3A looking north inside Transco Canal. Top of shell plug is below water surface. Date of photo: 6-25-2008.*



Photo 7. *Plug No. 1 – View of south bank tie-in of plug from east side of plug in Hester Canal looking west. Date of photo: 6-25-2008.*



Photo 8. *Plug No. 1 – View of north bank tie-in of plug from east side of plug in Hester Canal looking west. Date of photo: 6-25-2008.*



Photo 9. *Plug No. 2 – View of north bank tie-in of plug from west side of plug in Hester Canal looking east. Date of photo: 6-25-2008.*



Photo 10. *Plug No. 2 – View of south bank tie-in of plug from west side of plug in Hester Canal looking east. Date of photo: 6-25-2008.*



Photo 11. *Plug No. 6 – View of plug looking west along timber bulkhead in Transco Canal. Date of photo: 6-25-2008.*



Photo 12. *Plug No. 6 – View of plug looking east along timber bulkhead in Transco Canal. Deflection from vertical of the bulkhead can be seen. Date of photo: 6-25-2008.*



Photo 13. *Plug No. 4A – View of east side of plug looking northeast toward shoreline. This is the additional lift of rock placed as part of the 2005 maintenance project. Area behind rock is now densely vegetated. Date of photo: 6-25-2008.*



Photo 14. *Plug No. 4A – View of east shoreline tie-in of 2005 maintenance rock. Erosion pattern typical at termination point of shoreline rock can be seen. Date of photo: 6-25-2008.*



Photo 15. *Plug No. 4A – View of steel sheet pile bulkhead at the south end of Transco Canal looking east. Date of photo: 6-25-2008.*



Photo 16. *Plug No. 4A – View of steel sheet pile bulkhead at the south end of Transco Canal looking west. Date of photo: 6-25-2008.*



Photo 17. *Plug No. 4A – View of Petraflex mats on west side of plug looking west along shoreline. Erosion pattern typical at termination point of shoreline protection can be seen. Date of photo: 6-25-2008.*



Photo 18. *Area 5 Rock Dike – View of west end of rock dike looking northwest along shoreline. Continued shoreline erosion can be seen just at the tie-in.*



Photo 19. *Area 5 Rock Dike – View of rock dike looking northwest.*



Photo 20. *Area 4 Rock Dike – View of rock dike looking northwest.*



Photo 21. *Area 4 Rock Dike – View of rock dike looking southeast. The rock spur plug extending from the dike installed as part of 2005 maintenance can be seen on the left. Previous open water breach behind dike is now densely vegetated.*



Photo 22. *Area 4 Rock Dike – View of east end of 2005 maintenance rock looking southeast from shoreline. Continued shoreline erosion can be seen at tie-in and beyond.*



Photo 23. *Area 4 Rock Dike – View of east end of 2005 maintenance rock looking west from shoreline.*



Photo 24. *Area 4 Rock Dike – View of 2005 maintenance rock at east end of Area 4. Previous open water breach behind dike is now vegetated.*

Appendix C

Three Year Budget Projection

POINT AU FER ISLAND HYDROLOGIC RESTORATION / TE22 / PPL2
Three-Year Operations & Maintenance Budgets 07/01/2008 - 06/30/2011

<u>Project Manager</u>	<u>O & M Manager</u>	<u>Federal Sponsor</u>	<u>Prepared By</u>
	Dearmond	NMFS	Dearmond

	2008/2009	2009/2010	2010/2011
Maintenance Inspection	\$ 5,719.00	\$ 5,908.00	\$ 6,103.00
Structure Operation	\$ -	\$ -	\$ -
Administration	\$ -	\$ -	\$ -

Maintenance/Rehabilitation

08/09 Description:	

E&D	\$ -
Construction	\$ -
Construction Oversight	\$ -
Sub Total - Maint. And Rehab.	\$ -

09/10 Description	

E&D	\$ -
Construction	\$ -
Construction Oversight	\$ -
Sub Total - Maint. And Rehab.	\$ -

10/11 Description:	

E&D	\$ -
Construction	\$ -
Construction Oversight	\$ -
Sub Total - Maint. And Rehab.	\$ -

	2008/2009	2009/2010	2010/2011
<u>Total O&M Budgets</u>	\$ 5,719.00	\$ 5,908.00	\$ 6,103.00

<u>O&M Budget (3 yr Total)</u>	\$ 17,730.00
<u>Unexpended O&M Funds</u>	\$ 101,032.00
<u>Remaining O&M Budget (Projected)</u>	\$ 83,302.00

OPERATIONS & MAINTENANCE BUDGET WORKSHEET

Project: TE-22 Point Au Fer Island Hydrologic Restoration

FY 08/09 –

Administration		\$	0
O&M Inspection & Report		\$	5,719
Operation:		\$	0
Maintenance:		\$	0
E&D:	\$	0	
Construction:	\$	0	
Construction Oversight:	\$	0	

Operation and Maintenance Assumptions:

O&M Inspection and Report – Annual Inspection Field Trip Rate for 1-day trip with NMFS of \$4,691 (2002 price level) and annual inflation rate of 2.7% through 2007 and 3.3% for 2008 and beyond taken from PPL12 Project Cost Summary compiled by NRCS dated 8/6/2002.

FY 09/10 –

Administration		\$	0
O&M Inspection & Report		\$	5,908
Operation:		\$	0
Maintenance:		\$	0
E&D:	\$	0	
Construction:	\$	0	
Construction Oversight:	\$	0	

Operation and Maintenance Assumptions:

Same as above.

FY 10/11 –

Administration		\$	0
O&M Inspection & Report		\$	6,103
Operation:		\$	0
Maintenance:		\$	0
E&D:	\$	0	
Construction:	\$	0	
Construction Oversight:	\$	0	

Operation and Maintenance Assumptions:

Same as above.